Air Quality Permitting
Statement of Basis

May 5, 2005

Permit to Construct No. P-040310

Bear River Zeolite Co., Preston

Facility ID No. 041-00010

Prepared by:

Dustin Holloway, Permit Writer
AIR QUALITY DIVISION

PROPOSED FOR PUBLIC COMMENT

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
Btu	British thermal unit
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct (PTC).

2. FACILITY DESCRIPTION

Bear River Zeolite Co. (BRZ) is a mining facility located near Preston. The facility mines zeolite ore and transfers it to crushing equipment where the zeolite is crushed, screened, and dried.

3. FACILITY / AREA CLASSIFICATION

BRZ is defined as a minor facility for prevention of significant deterioration purposes because the potential particulate matter (PM) emissions do not exceed 250 tons per year (T/yr). Additionally, the facility is synthetic minor for Title V purposes because the emissions of pollutants regulated by the Title V program are limited to less than one hundred tons per year. The AIRS classification is "SM" because the potential emissions of any regulated air pollutant are limited to less than the applicable major source thresholds.

The facility is located within AQCR 61 and UTM zone 12. The facility is located in Franklin County which is designated as unclassifiable for all criteria pollutants (PM_{10}, CO, NO_x, SO_2, lead, and ozone).

The AIRS information provided in Appendix B defines the classification for each regulated air pollutant at BRZ.

4. APPLICATION SCOPE

BRZ submitted a PTC application on May 17, 2004 for the zeolite mine and crushing equipment.

4.1 Application Chronology

May 17, 2004	DEQ received BRZ's PTC application
June 21, 2004	DEQ determined the application complete

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

The following table contains the general specifications for the equipment at the BRZ facility.

Table 5.1 EQUIPMENT LISTING

Source Description	Emissions Control
Crushers, Mills, and Screens **Primary Crusher** Portec, Inc. Pioneer Division Jaw Crusher Capacity: 300 T/hr **Primary Crushing Building** Nordberg Mfg. Co. Cone Crusher Capacity: 100 T/hr Kohler Screen Capacity: 300 T/hr Size: 5 ft by 12 ft **Secondary Crushing Building** Jeffries Hammer Mill Capacity: 50 T/hr 2 Midwest Screens Capacity: 25 T/hr Size: 5 ft by 7 ft **Coarse Products Building** Philadelphia Hammer Mill Capacity: 10 T/hr Midwest Screen Size: 4 ft by 8 ft 2 Sweeco Screens Capacity: 10 T/hr Size: 4 ft diameter **Fine Products Building** Allis Chalmers Tube Mill Capacity: 10 T/hr 2 Derrick Screens Capacity: 10 T/hr Size: 3.5 ft by 10.5 ft	None Contained in a building. Building emissions are vented through a baghouse Contained in a building. Hammer mill emissions are vented through a baghouse. Contained in a building. Hammer mill emissions are vented through a baghouse. Contained in a building
Generators GMC 8V92T/Lima Rated Output: 250 kW Fuel Type: Diesel Caterpillar 1693T Rated Output: 150 kW Fuel Type: Diesel Caterpillar 3304 Rated Output: 113 kW Fuel Type: Diesel	None
Kerr McGee Drum Dryer Rated Heat Input: 1,000,000 Btu/hr Fuel Type: Propane	Mikro Pulsaire Baghouse
Mining Operations	Fugitive Dust Control Plan

5.2 Emissions Inventory

The applicant estimated crushing equipment emissions using AP-42 emissions factors for crushed stone processing. For sources in buildings the applicant assumed a 70 percent particulate matter control efficiency for the building. For sources whose emissions are vented to baghouses the applicant used a control efficiency of 99.4% for PM_{10}. This is the weighted average of the emissions factors for particulate matter emissions from 0-2.5, 2.5-6, and 6-10 micrometers based on the percent by mass of each size speciation listed in AP-42 Table B.2-3. The generator emissions are based on AP-42 emissions factors for small internal combustion engines. The factors were taken from Table 3.3-1 for criteria pollutants and Table 3.3-2 for toxic air pollutants (TAPs). Emissions from the propane fired dryer were estimated using AP-42 emission factors for combustion sources plus an estimate for the particulate matter emissions from the baghouse. The cyclone listed in the emissions calculations was replaced with a baghouse. The applicant did not provide an updated emissions estimate. However, the baghouse is more efficient than the cyclone. Therefore, the emissions rate for the cyclone is a conservative estimate. Fugitive emissions from mining sources were estimated by the applicant using AP-42 emissions factors for drilling, blasting, truck loading, and vehicle traffic. The following tables summarizes the emissions from BRZ.

Table 5.2 CRITERIA POLLUTANT EMISSIONS ESTIMATE

Source	Pollutants							
Source Description	PM_{10}		NO_2		SO_X		CO	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
250 kW Generator	7.27E-01	3.19	10.35	45.33	0.68	2.98	2.23	9.77
150 kW Generator	4.36E-01	1.91	6.21	27.20	0.41	1.79	1.34	5.86
113 kW Generator	3.29E-01	1.44	4.68	20.49	0.31	1.35	1.01	4.41
Cyclone	2.64	11.58						
Baghouse #1	8.12E-01	3.56	0.15	6.7E-01	2.19E-04	9.59E-04	2.08E-02	9.11E-02
Baghouse #2	1.06	8.11						
Baghouse #3	1.85	4.63						
Total Point Source Emissions	7.9	34.4	21.4	93.7	1.4	6.1	4.6	20.1

Table 5.3 FUGITIVE DUST EMISSIONS ESTIMATE

	PM_{10}	
	lb/hr	T/yr
Primary Jaw Crusher	8.00E-02	3.51E-01
Apron Feeder Feed	6.06E-01	2.65
Primary Jaw Feed	6.06E-01	2.65
Trans. To Primary Screen Feed Belt	6.06E-01	2.65
Trans. To 50/100 Ton Bin Feed Belt	2.02E-01	8.85E-01
50 Ton Bin Feed	2.02E-01	8.85E-01
Minus 1" 100 Ton Bin Feed	2.02E-01	8.85E-01
Trans. To 20 Ton Bin Feed Belt	2.02E-02	8.85E-01
20 Ton Bin Feed	2.02E-02	8.85E-01
Bucket Elevator	2.02E-02	8.85E-01
Minus 100 100 Ton Bin Feed	2.02E-02	8.85E-01
14X40 100 Ton Bin Feed	2.02E-02	8.85E-01
Minus 100 Bulk Loadout	2.02E-02	8.85E-01
14X40 Bulk Loadout	2.02E-02	8.85E-01
Coarse Product Building	1.65E-01	0.72
Secondary Crushing/ Screening Building	2.92E-01	1.28
Fine Products Building	5.01E-01	2.20
Drilling	7.6E-02	3.34E-01
Blasting	1.52	6.67
Rock Truck Loading	4.0E-02	1.77E-01
Vehicle Traffic	3.96	17.35
Total Fugitive Emissions	9.20	45.9

Table 5.4 TOXIC POLLUTANT EMISSION RATES

	Formaldehyde	Benzene	Acetaldehyde	POM
250 kW Generator	2.77E-03	2.19E-03	1.80E-03	8.05E-06
150 kW Generator	1.66E-03	1.31E-03	1.08E-03	4.83E-06
113 kW Generator	1.25E-03	9.90E-04	8.14E-04	3.64E-06
Baghouse #1 (dryer emissions)	7.35E-05	1.18E-08		1.76E-09

5.3 Modeling

The applicant modeled the facility-wide PM_{10}, NO_x, and SO_2 emissions. The resulting concentrations are summarized in the following table. A detailed modeling analysis is contained in Appendix A.

Table 5.5 CRITERIA POLLUTANT MODELING RESULTS

Pollutant	Averaging Period	Facility Ambient Concentration (µg/m³)	Total Ambient Concentration (µg/m³)	NAAQS (µg/m³)	Percent of NAAQS
PM_{10}	24-hour	41.11	117.1	150	78
	Annual	12.18	38.18	50	76
NO_2	Annual	16.23	33.23	100	33
SO_X	3-hour	17.74	59.60	1300	4
	24-hour	6.95	32.95	365	9
	Annual	1.06	9.06	80	11

In addition to the criteria pollutants above the applicant modeled the toxic pollutants whose emissions exceeded the applicable screening emissions limits. The resulting concentrations are summarized in the following table. A detailed analysis is contained in Appendix A.

Table 5.6 TOXIC POLLUTANT MODELING RESULTS

Pollutant	Averaging Period	Maximum Concentration (µg/m³)	TAP Increment (µg/m³)	Percent of Increment
Carcinogens				
Acetaldehyde	Annual	2.80E-03	4.5E-01	0.6
Benzene	Annual	3.40E-03	1.2E-01	3
Formaldehyde	Annual	4.37E-03	7.7E-02	6
POM	Annual	0.0001	3.0E-04	33

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201..... Permit to Construct Required

The construction of this facility requires a PTC because it increases emissions of regulated air pollutants.

40 CFR 60 Subpart OOO..... Rules for Standards of Performance for Nonmetallic Mineral Processing Plants

This facility is subject to the performance standards for rock crushing facilities in accordance with 40 CFR 60.670. These standards include opacity requirements for each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, and storage bin at the facility. Additionally, there are grain loading requirements for any vent associated with a building which encloses any equipment affected by Subpart OOO. A description of the specific requirements can be found in the permit conditions section of this statement of basis.

Other Requirements ..... Consent Order Dated April 12, 2004

The April 12, 2004 consent order for BRZ contained a requirement that the facility submit a PTC application to address the equipment at BRZ which was constructed without a PTC. This permit is based on that application.

The consent order required BRZ to submit a fugitive dust control plan. DEQ did not formally approve this plan. During permit review the fugitive dust plan was reviewed and DEQ determined that additional information should be included. This permit requires that BRZ submit a modified fugitive dust plan. Permit Condition 5.4 describes the information that must be included in the fugitive dust plan. BRZ has reviewed the fugitive dust plan in the permit and accepted the conditions.

The consent order required that BRZ conduct performance tests on the rock crushing equipment in accordance with 40 CFR 60 Subpart OOO. BRZ submitted performance test reports to DEQ for review, however there is still equipment at the facility which requires performance testing. Permit Condition 5.4 requires that BRZ conduct performance tests on all sources affected by 40 CFR 60 OOO. BRZ is responsible for determining which equipment requires performance testing.

5.5 Fee Review

This facility is subject to the $1,000 application fee for PTCs in accordance with IDAPA 58.01.01.224. The facility paid the $1,000 application fee on October 21, 2002. Additionally, this facility is subject to a PTC processing fee of $7,500 for an increase in point source emissions of more than 100 T/yr in accordance with IDAPA 58.01.01.225. This fee must be received before the final permit is issued.

Table 5.7 PTC PROCESSING FEE TABLE

Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	93.7	0	93.7
SO_2	6.1	0	6.1
CO	20.1	0	20.1
PM/PM_{10}	79.7	0	79.7
VOC	7.4	0	7.4
Total:	207.0	0	**207.0**
Fee Due	**$ 7,500.00**		

6. PERMIT CONDITIONS

Crushing Operations

6.1 Permit Condition 2.3 establishes a limit on the opacity from crusher emissions which do not have a capture system to no more than 15% in accordance with 40 CFR 60.672(c).

6.2 Permit Condition 2.4 establishes a limit on the opacity from transfer points, mills, screens, bucket elevators, bagging operations, storage bins, enclosed trucks, and rail stations to no more than 10% in accordance with 40 CFR 60.672(b).

6.3 Permit Condition 2.5 establishes a limit on opacity from any stack, vent, or other functionally equivalent opening to no more than 20% for a period or periods aggregating more than three minutes in any consecutive 60-minute period in accordance with IDAPA 58.01.01.625.

6.4 Permit Condition 2.6 establishes a PM emission limit from any stack from any of the buildings enclosing equipment affected by 40 CFR 60 Subpart OOO to no more than 0.022 grains per dry standard cubic foot in accordance with 40 CFR 60.672(a). This emission limits is more stringent than the emissions rates in the applicants analysis. Therefore, no additional emissions limits are necessary to assure compliance with the NAAQS.

6.5 Permit Condition 2.7 requires that there be no visible emissions from any of the buildings enclosing equipment affected by 40 CFR 60 Subpart OOO in accordance with 40 CFR 60.672(e)(1).

6.6 Permit Condition 2.8 limits the throughput of the facility to no more than 480 tons per day. This is the rate that the facility used to demonstrate that the facility is a minor source and is the rate used to demonstrate compliance with the applicable NAAQS.

6.7 Permit Condition 2.9 requires that the facility operate baghouses on the primary crushing building, secondary crushing building, and the course products building. This condition is necessary to assure that the facility can meet the zero visible emissions requirement from buildings in Permit Condition 2.7, as well as the stack emissions limits in Permit Condition 6.4.

6.8 Permit Condition 2.10 requires the facility to develop and follow an operations and maintenance manual for the zeolite dryer baghouse.

6.9 Permit Condition 2.11 requires the facility to conduct performance tests on all applicable sources affected by 40 CFR 60 Subpart OOO. At the time this permit was processed the performance tests had not been reviewed. This permit requirement can be satisfied by tests conducted prior to permit issuance, if they demonstrate compliance with 40 CFR 60 Subpart OOO.

6.10 Permit Condition 2.12 requires the facility to monitor and record the amount of zeolite bagged once per day to demonstrate compliance with Permit Condition 2.8.

6.11 Permit Condition 2.13 requires the facility to submit reports of any performance tests conducted to demonstrate compliance with 40 CFR 60 Subpart OOO to DEQ within 30 days of conducting the test. This condition also requires the facility to submit reports to EPA within the timelines specified in 40 CFR 60.676.

Generators

6.12 Permit Condition 3.3 limits the opacity from the generator stacks to no more than 20% for a period or periods aggregating more than three minutes in any consecutive 60 minute period in accordance with IDAPA 58.01.01.625. Emissions from the generators, while operating at maximum capacity, do not exceed any ambient air quality standards nor affect the major/minor source status of the facility. Therefore, no further permit conditions are needed for the generators.

Zeolite Dryer

6.13 Permit Condition 4.2 limits the hourly and annual PM_{10} emissions from the zeolite dryer baghouse. These limits were included to protect the NAAQS and to assure that the facility remains a minor source for PM_{10}.

6.14 Permit Condition 4.3 limits the opacity from the dryer stacks to no more than 20% for a period or periods aggregating more than three minutes in any consecutive 60 minute period in accordance with IDAPA 58.01.01.625.

6.15 Permit Condition 4.4 requires that the zeolite dryer be fueled by liquefied petroleum gas or natural gas only. This is fuel used in the emissions analysis to demonstrate that this is a minor facility and to demonstrate compliance with the applicable NAAQS.

6.16 Permit Condition 4.5 requires that the zeolite dryer utilize a baghouse to control particulate emissions whenever the dryer is operating as the facility indicated in their application.

6.17 Permit Condition 4.6 requires the facility to develop and follow an operations and maintenance manual for the zeolite dryer baghouse.

Mining Operations

6.18 Permit Condition 5.3 requires that visible fugitive emissions not be observed leaving the property boundary for a period or periods which exceed three minutes in any consecutive 60 minute period. This condition is used to determine if the facility is reasonably controlling their fugitive emissions.

6.19 Permit Condition 5.4 requires the facility to develop a fugitive dust plan that meets the following requirements:

1. A general description of the potential sources of fugitive dust from the facility.
2. Application of water from water trucks for control of dust in mining areas, haul roads and loadout areas. The Plan must establish criteria to determine when water must be applied. Water does not need to be applied when the surface is wet (i.e. during/following rainy conditions) or when reduced ambient temperatures may cause the water to freeze. The applicant may choose to use surface improvements to existing roads in lieu of water application where appropriate to control fugitive dust.
3. Application of suitable dust suppressant chemicals (e.g., magnesium chloride) to haul roads during the dry season when necessary to control fugitive dust. The Plan must establish criteria to determine when dust suppressant must be applied. The applicant may choose to use surface improvements to existing roads in lieu of water application where appropriate to control fugitive dust.
4. Develop a dust control strategy for the drill rigs. The Plan must establish criteria to determine when dust control is needed on the drilling equipment. Suitable dust control strategies for the drill rigs include water spray systems, dust suppressant chemicals, enclosures, mechanical control devices, or a DEQ approved alternative method.
5. Establish procedures to minimize material drop heights and dust formation during truck loading operations and when dumping material from front-end loaders.
6. Establish procedures to minimize dust formation during conveying operations. The Plan must establish a method to determine the appropriate drop heights for transfer points.
7. Training/orientation of employees about the Fugitive Dust Control Plan procedures.
8. The initial Fugitive Dust Control Plan shall be submitted to DEQ for review and approval no later than 60 days after the issuance date of this permit. After approval of the initial plan, the permittee may update the plan at any time by submitting the proposed changes to DEQ for review and approval. The updated plan shall not become effective until approved by DEQ. If DEQ deems that the change in the plan qualifies as permit to construct modification as defined in IDAPA 58.01.01.006, the procedures specified in IDAPA 58.01.01.200-228 shall be followed to make the change.
9. Establish daily monitoring and recordkeeping of those criteria established to determine when control strategies must be employed for haul roads and drill rigs.

10. When in operation, the permittee shall comply with the provisions in the approved Fugitive Dust Control Plan at all times. Whenever an operating parameter is outside the operating range specified by the plan, the permittee shall take corrective action as expeditiously as practicable to bring the operating parameter back within the operating range.

11. A copy of the Fugitive Dust Control Plan shall remain onsite at all times.

6.20 Permit Condition 5.5 requires the permittee to conduct monthly inspections of sources of fugitive dust sources to ensure that fugitive dust emissions are being reasonably controlled. The results of each inspection are to be recorded and maintained on site.

6.21 Permit Condition 5.6 requires the permittee to maintain records of the methods used to reasonably control fugitive dust emissions.

7. FACILITY DRAFT

A draft permit was submitted to the facility for review on February 25, 2005. The facility commented on the fine products building. The facility installed a baghouse to control emissions from the fine products building. The modeling analysis was conducted assuming there was no baghouse control on the fine products building. Adding a baghouse will reduce the emissions from this source. Therefore, no further requirements were added to this permit. However, the performance testing requirements in Permit Condition 2.11 still apply to the new baghouse in accordance with 40 CFR 60 Subpart OOO.

8. PUBLIC COMMENT

This permit is being submitted for a public comment period prior to final issuance.

9. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that the BRZ PTC No. P-040310 be submitted for public comment in accordance with IDAPA 58.01.01.209.01.c. This project does not involve PSD requirements.

DH/sd Permit No. P-040310

G:\Air Quality\Stationary Source\SS Ltd\PTC\Bear River Zeolite\Pub Com\P-040310 SOB.doc

Appendix A
Modeling Analysis

Appendix B
AIRS Information